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THE ANTITOXIN CONTENT OF COMMERCIAL LAMB DYSENTERY SERUM

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Previous work (1936) has shown that great variation can exist between the brands of lamb dysentery sera sold in this country, and that owing to an inadequate antitoxin content, some sera fail to protect lambs from the naturally occurring disease. Whilst the writers appreciate that certain firms have now adopted their own standards, by which their output is regulated, the continued absence of an official standard of efficiency and control of the sale of such biological products is viewed with concern.

The writers recently conducted a series of tests on eight brands of commercial lamb dysentery sera offered for sale in this country, the results of which are set out in this paper. All the sera, with the exception of brand No. 1, were produced in this country. During the course of the tests it became evident that Nos. 2 and 5 were identical as also were Nos. 3 and 6; the results for Nos. 5 and 6 are not, therefore, recorded separately.

EXPERIMENTAL

Montgomerie and Rowlands (1934) (1936) had shown that an efficient lamb dysentery serum must contain antitoxins capable of neutralising the main toxins of *Cl. welchii* Types C and D, these being identical with the two main fractions of the toxin of the *lamb dysentery bacillus* (*Cl. welchii* Type B). The test, therefore, consisted of assessing the Type C and Type D antitoxin content of the various sera.

Local strains of *Cl. welchii* Type C and Type D were used in the preparation of the test toxins, the latter being employed in the form of toxic filtrates. The "unit" of antitoxin adopted* was defined as the minimum amount necessary to afford complete protection to a mouse inoculated intravenously with the *test dose* of toxin (10 M.L.D.). Two mice were used for each serum dilution and results were read after four hours and 24 hours in the case of Type C and Type D toxins respectively. The results obtained indicated that the sera could be roughly classified as shown in table in opposite column :—

In view of what appeared a low Type D antitoxin content of these sera, a sample of an older batch of lamb dysentery serum prepared by the manufacturers

Brand.	"Units" of Antitoxin.	
	Type "C."	Type "D."
1	1,000	100
2 and 5	1,000	25
3 and 6	1,300	40
4	2,500	75
7	Less than 100	Less than 50
8	Less than 20	20

of Batch No. 4, together with an Ovitoxicus (*Cl. welchii* Type D) serum were tested in an identical manner for their Type D antitoxin content, using the same Type D filtrate as in the testing of the other sera. These tests showed the following results :—

Ovitoxicus	250	"units."
Lamb Dysentery (old batch)	125–150	,,

The figure obtained for this lamb dysentery serum indicated that considerable variation existed even among batches of sera produced by the same manufacturer and also suggested that the values obtained for the sera under test were, in general, very low.

TESTS WITH LAMB DYSENTERY TOXIN

Confirmatory tests were then conducted, using dried precipitated toxins, prepared by saturation with ammonium sulphate of 16 hour and 10 day culture filtrates of a strain of the *lamb dysentery bacillus* isolated in 1940.

Preliminary tests of these toxins showed that the former consisted mainly of *beta* toxin (the main component of Type C toxin) with little or no *epsilon* (the main component of Type D toxin) while the latter was largely *epsilon* and contained no *beta* toxin. The *test dose* of toxin employed was that amount of dried toxin which when mixed with one unit of a standard serum would be just sufficient to cause the death of a mouse on intravenous inoculation. Brand No. 4 was chosen as a "standard" and given the arbitrary value of 1,000 "units" of Type C and 100 "units" Type D antitoxins. Mixtures of serum and toxin were prepared and inoculated as before. The results obtained are set out below, together with the results previously obtained with *Cl. welchii* Type C and Type D toxic filtrates scaled in accordance with the arbitrary value given to Brand No. 4.

*For the sake of convenience amounts of antitoxin have been expressed in "units." It is not suggested that the "unit" used in these tests will bear any relationship to any unitage that may be decided upon if and when standardisation of these products is considered by any official body.

Brand.	"Units" of Antitoxin.			
	L.D. 16 hour.	Type "C."	L.D. 10 day.	Type "D."
1	275	400	100	133
2	350	400	30	33
3	600	520	55	53
4	1,000	1,000	100	100
7	35	Less than 40	25	Less than 66
8	Much less than 25	Less than 8	30	27

It is seen that, as in 1936, a very considerable variation existed in the antitoxin content of these sera. Brands 7 and 8 are exceptionally low and Brand No. 4 stands in a class of its own, having a potency (Type C) approximately twice that of any of the remaining sera. Although all brands might be regarded as somewhat low in Type D content, Brands 1 and 4 have approximately double the content of any other brand.

DISCUSSION

In the foregoing description of the test conducted, the terms "Type 'C' fraction" and "Type 'D' fraction" indicate the antitoxins corresponding to the principal mouse-lethal toxins produced by the *lamb dysentery bacillus* (*Cl. welchii* Type B). It is realised that the mouse intravenous test measures merely the summation of several toxic effects but this test was thought to be sufficiently accurate for the purpose.

Glenny, Barr, Llewelyn Jones, Dalling and Ross (1933) showed that a number of individual toxins could be detected in toxic filtrates prepared from cultures of *Cl. welchii* Types "B," "C" and "D" (Wilsdon). *Cl. welchii* Type B was shown to be capable of producing, under favourable conditions, *alpha*, *beta*, *gamma*, and *epsilon* and occasionally *delta* toxins. Type C could produce *alpha*, *beta*, *gamma* and *delta* but not *epsilon*, while Type "D" could produce *alpha* and *epsilon*. Dalling and Ross (1938) reviewing this work, indicated the great variation in the types of toxin produced by any one type of *Cl. welchii* under variable conditions of growth. Thus the results of these present tests with Type C and Type D filtrates and with Type B dried toxins, though depending chiefly on the amounts of *beta* and *epsilon* toxins and antitoxins present in filtrates and sera respectively, might be modified by the presence of the other toxic fractions.

Montgomerie and Rowlands (1934) showed that in some lambs dead of lamb dysentery a Type C or a Type D toxin could be detected in intestinal contents, the latter being the more constant. Dalling and Ross (1938) likewise showed that in cases of lamb dysentery different types of Welchii toxins could be found in the alimentary contents. They isolated pure cultures of *Cl. welchii* from various levels of the alimentary canal in these cases and showed that both *Cl. welchii* Type "D" and *Cl. welchii* Type "B" might be found even in the same case. They pointed out that in the absence of definite evidence of the types of toxin which the infecting organism is capable of producing, the prophylactic vaccine or serum must contain adequate amounts of *all* the available antigens or antitoxins associated with the *Cl. welchii* group.

Failures with lamb dysentery serum in the field were shown (1934) to be due to the absence from the serum of an adequate *epsilon* antitoxin content (the strain used for immunisation having suddenly lost its power to produce this fraction). It is known that the *lamb dysentery bacillus* under laboratory conditions can produce *alpha* and *gamma* and sometimes also *delta* toxin and in the present state of our knowledge it would not be possible to say that these toxins are not produced in significant amounts, or that they do not contribute to the symptoms and to death in some outbreaks of lamb dysentery. It is conceivable therefore that sera deficient in *alpha*, *gamma*, or *delta* antitoxins might also show a partial failure in the field, although there is no direct evidence that any one of these toxins alone is lethal to lambs. Lamb dysentery sera should, therefore, contain not only a high concentration of *beta* antitoxin and a reasonable amount of *epsilon* antitoxin, but also adequate amounts of the other antitoxins. In the tests recorded no attempt to measure the amounts of individual antitoxins has been made but reliance has been placed on the mouse intravenous test to give a comparison of the content of antitoxins to mouse-lethal toxins. It is considered, however, without attempting to state dogmatically what should be regarded as an efficient standard content, that the tests have shown that two out of the six sera examined (Brand Nos. 7 and 8) must be regarded as quite useless for the control of lamb dysentery. Moreover, the variation in antitoxin content of the other four sera was considerable. It is considered that sera Nos. 1 and 2 would probably give a small margin of safety in respect of their *beta* content and that failures might occur in some outbreaks. Moreover, although no exact data are available, it is conceivable that in some outbreaks, the *epsilon fraction* might assume greater importance and that in such outbreaks all the sera, especially Nos. 2 and 3, might prove relatively inefficient.

It is felt that, despite lack of exact knowledge as to what could be regarded as adequate amounts of the available antitoxins associated with the *Cl. welchii* group, in any particular serum, it should not be difficult for a committee representative of experience in the manufacture and in the practical use of lamb dysentery sera to determine arbitrary minimal values to which commercial lamb dysentery sera could be required to conform. These could later be modified in the light of future research and experience.

With regard to lamb dysentery serum, the position thus appears to be little better than it was in 1936 and the writers feel that some form of official control of the sale and standardisation of such sera is urgently required. There seems no reason why such control should not be immediate as the machinery whereby it could be made effective is in existence. The Diseases of Animals Act, Part 2, 1935, provides for just such an emergency. That an emergency exists is evident from these results, consisting as it does in the possibility of losses from the disease despite prophylactic treatment, and the doubt arising as to the value of a particular biological product which, when the agent is efficient, can never be questioned.

Summary

1. Six brands of commercial lamb dysentery serum, five of British and one of foreign origin, were tested in respect of the two main antitoxins concerned.

2. Two were shown to have a low antitoxin content, while a wide variation existed in the content of the other four.

3. The results are discussed and the view expressed that two of the sera were totally inefficient for field use and the four remaining had only a small margin of safety, whilst all might be relatively inefficient in view of possible unknown variations in the form taken by the naturally occurring disease.

4. The need for official standardisation is stressed.

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MOVEMENT OF ANIMALS

"A number of prosecutions recorded in the Press in recent weeks suggests that even at this late date a certain amount of ignorance prevails concerning the requirements of the law in regard to the question of keeping a record of the movement of farm animals," observes a writer in the *Scottish Farmer*, who proceeds: "In the cases mentioned ignorance of the law was put forward as a defence; but as this was no valid excuse, substantial fines were inflicted. Even admitting that nowadays the average farmer has often cause for annoyance in respect of the number of official forms he has to fill up— so much so indeed that he may sometimes pause to consider whether he is a farmer or a clerk—the statutory requirements in regard to the movement of animals are based upon reasonable grounds and can be defended as being in the interests of farming as a whole. The underlying idea is to provide the authorities with data ready to hand to enable them to check with all possible speed the spread of disease in the event of a serious outbreak occurring. In the event, say, of an outbreak of foot-and-mouth disease, it is of the first importance that material should be available to enable a quick check-up to be made of the whereabouts of all animals that may be under suspicion.

"The matter is regulated by the Movement of Animals (Records) Order of 1925 which is administered by the Minister of Agriculture and Fisheries and applies to Scotland as well as to England. The Order applies to cattle, sheep, goats and pigs, and the local administrators are the authorities constituted under the Diseases of Animals Acts—*i.e.*, in Scotland county councils and most of the larger burghs. It requires any person who moves, or permits to be moved, any of the animals mentioned to or from his premises, to keep in a prescribed form a record of their movements. The record must be kept in ink or in indelible pencil, and it must show the date of movement of the animals, their numbers and descriptions, and the premises to and from which they are moved. If it is available the name and address of the person from whom delivery is taken must also be furnished. There are exceptions in the case of animals moved to or from authorised landing lairs, while a person acting as a market authority, or an auctioneer at a market sale-yard, or other similar premises, is also exempted from the requirement of the Order. A railway company is exempt in regard to animals moved to or from a railway station for transit."

* * * * *

War on rats, which, it is estimated, damage our food supplies to the extent of at least £25,000,000 every year, is to be intensified. A joint campaign to make the nation conscious of this danger to our resources has been launched by the Ministry of Agriculture and Ministry of Food, and the co-operation of farmers, local authorities and the general public is being sought.

The Efficacy of Udder Infusion with Entozon as a Treatment for Infection with Group B Streptococci *(Str. Agalactiae)**

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Introduction

Udder infusion with bactericidal substances as a treatment for contagious bovine mastitis has been in practice in Europe for some years past and a voluminous literature has been amassed on the subject. It has been summarised admirably by Stableforth and Scorgie (1938), and it is felt that little purpose could be achieved by repetition. Furthermore, the means of diagnosing the disease employed in continental countries are various, and none are based on serological methods. The methods used at this station vary but slightly from those evolved by Stableforth, and it is considered that a true comparison can be made only with the results he has obtained (Stableforth and Scorgie, 1938). Stableforth states that in his trial of the value of Entozon he cured 29 of 46 milking quarters (63 per cent.) affected with latent mastitis, representing 9 of 14 cows (64·3 per cent.), after two treatments of five minutes each, while 10 of 13 dry quarters similarly affected, representing 5 of 6 dry cows, were cured after two treatments of 24 hours each. With clinical cases his results were less satisfactory, 11 of 31 milking quarters (35·3 per cent.), representing 1 of 8 cows, being cured after one to five treatments of five to ten minutes, while only 2 of 6 quarters, representing 0 of 2 cows, were cured after two treatments of 24 hours. Summing the results, it is seen that 45·5 per cent. of the milking cows were cured, while 5 of 8 (62·5 per cent.) of dry cows responded satisfactorily to the treatment. It is felt that it is better to distinguish between dry and milking cows rather than latent and clinical infections, for, unless the clinical symptoms are marked, it is very difficult to be sure of such a differentiation. Again, it is difficult, if not impossible, to obtain satisfactory material from dry cows for bacteriological examination, and to take the samples after the next calving is dangerous, as evidence will be offered in this article that cows can become infected while in the dry state.

In the experiments about to be described no differentiation is made between latent and clinical cases except in discussion, because it was found that the degree of infection did not necessarily govern the response to the treatment. Furthermore, the cow has been taken as the unit as it is obvious that there is little value in eradicating group B streptococci (*Str. agalactiae*) from one quarter of a cow if other quarters remain infected.

It was found that it was wiser to treat all four quarters of any cow found to be infected because of the difficulty of detecting all infections at one examination, and it is apparent that the time of the operator would be more costly than the expense of the material employed. Only cows in milk have been treated in these experiments.

Procedure

Quarter samples of all milking cows were examined by the bacteriological methods described previously (Stewart, 1938). All infected cows were treated and milk samples examined seven days after treatment. If the examination was negative, further samples were examined after an

* Reproduced from *Aust. vet. J.* (1940.) **16.** 108-111.

interval of seven days. All cows found to be still infected at either the first or second examination were subjected to another treatment. Thus all cows were required to pass two bacteriological examinations at an interval of a week before being considered free from infection.

The Entozon in a dilution of 1/1250 in distilled water is infused at approximately blood heat under gravity pressure from an inverted winchester attached by a piece of rubber tubing to a teat siphon of as large dimensions as is practicable. Distilled water is recommended for the solution, but any supply of clean non-irritant water may be used, and such a supply was used in one of the experiments to be described. The winchester was fitted with a short tube, through which the Entozon flowed, and a long tube allowing air to pass into the vessel to replace the flowing Entozon. The inverted winchester may be held by an assistant who may gain added height by standing on a box, or it may be suspended by some means depending upon the ingenuity of the operator.

The udder is first cleaned and then thoroughly milked out and stripped. Aseptic precautions are observed, the teat siphons being boiled and the tip of the teat cleaned with alcohol or methylated spirits. A teat siphon is connected to the rubber tubing, and by means of a clip the flow of Entozon may be controlled. All air is run out of the tubing. The teat siphon is then inserted and about 150 ml. of the solution allowed to flow into the quarter. This quantity is milked out immediately, the teat siphon reinserted and the solution is allowed to infuse into the quarter until a tension comparable to that existing just prior to milking is reached. Any attempt to distend the quarter unduly is resented by the cow, and the desired degree of tension is easily recognised. The solution is allowed to remain in the quarter seven minutes and is then milked out, and the cow should be stripped as frequently as possible in the next 24 hours. In dry cows a solution of 1/500 is employed and it is allowed to remain in the quarter 24 hours before being removed.

Although individual quarters vary in their capacity, it is found that an allowance of 1 litre per quarter is sufficient when calculating the total amount necessary.

Further, it is found that the average time taken to treat all four quarters of one cow is 20 minutes.

Herds Treated

Herd A.—Comprised 47 cows, of which 25 were found to be infected and were treated. The organism was eradicated from 9 of these after one treatment, from 5 after two treatments, from 3 after three treatments, from 1 after four treatments, and from 2 after five treatments. Thus 56 per cent. were considered free from infection after two treatments, 68 per cent. after three treatments, and 80 per cent. after five treatments.

It is considered that the practical limit of the number of treatments is three, and included among the 68 per cent. which responded to treatment at this juncture were three cows which had obvious clinical symptoms. The three cows which required a greater number of treatments than three could not be classed as clinical cases, nor were they at any time heavily infected. Moreover, no particular factor could be identified to explain their refractory behaviour. Of the five cows which were considered as totally resistant to the treatment, three were extensively fibrosed, and one, which, while not showing any clinical symptoms, was still infected after four treatments and was sold for slaughter, as it was the only remaining infected member of the herd. The remaining cow, however, was a first calf heifer which was infected in all four quarters at calving. In spite of three treatments the udder of this case became rapidly and uniformly fibrosed, although at no time was any alteration in the appearance of the milk obvious, nor was any deposit present after centrifuging the samples.

Thus it may be stated that, apart from severely fibrosed cases which may be classed as hopeless, there is nothing to differentiate those cows which will respond to treatment and those which will not.

Of the 20 cows which were considered to be free of infection, 10 have completed their lactation, and in no instance was *Str. agalactiae* detected before they had dried off. Milk samples from the remaining 10 cows were re-examined also, and in one case *Str. agalactiae* was detected in a quarter which was infected previously with a strain of the same serological type. The cow in question had passed two successive examinations after two treatments.

This herd was situated conveniently adjoining this station, and consequently it was possible to prepare the necessary solution and materials in the laboratory and transport them to the dairy. It was thought, therefore, that it would be wise to make a further test under conditions approaching the average.

Herd B.—This herd comprised 69 head, of which 15 members were found to be infected with *Str. agalactiae*. In conducting the treatments the dairy tank water was employed to make up the solution. However, the precaution was taken to see that it was not irritant by infusing a sample into the udder of a cow and observing the reaction for several days. The solution was taken in bottles containing 25 ml. quantities of 1/12·5 Entozon, each of which added to 2·5 litres (4 pints 8 ounces) produced the desired strength of 1/1,250. The solution was brought to the approximate temperature by mixing water heated in the copper, and cold water. The teat siphons were boiled over a primus stove. Of the 15 infected cows 11 (73·3 per cent.) were free from infection after two treatments. A further treatment of the four remaining cows effected no improvement. The cows which proved unresponsive to the treatment were all infected with type 3, but this is not considered significant because other cows infected with this type have responded satisfactorily to the treatment.

DISCUSSION

From these two trials it is seen that the organism can be eradicated from about 70 per cent. of infected cows by two or preferably three treatments with Entozon, and it is of interest that results of the same order were obtained in both herds. From a practical viewpoint the few resistant cows other than the severely fibrosed cases, which should be discarded, are disconcerting because there is no means of detecting them other than by careful bacteriological examination.

A point of great interest which has been evident in Herd A is that first-calf heifers may be infected before they are brought into the dairy. Of 14 first-calf heifers in Herd A which had never been in contact with the dairy before the first milk samples were taken as soon as the colostrum had disappeared, six were found to be infected. It should be mentioned that these heifers were not all born from infected dams. In four of these heifers, *Str. agalactiae* was present in all four quarters, in another in two quarters and in the remaining one in one quarter. This fact has been observed by Hucker (1937), who isolated *Str. agalactiae* in two instances from the udder of virgin heifers, and by Klein, Kleckner and Scheidy (1938), who isolated *Str. agalactiae* from six of ten heifers which exhibited a swelling of one or more quarters during pregnancy. With the one exception

which has already received comment, the remaining heifers required at the most three treatments to free the udders from the organism.

Although somewhat outside the scope of this article, it should be stated that the treatment has not been found to be of any great assistance in acute cases of staphylococcic mastitis. As might be expected, it is impossible to infuse any quantity of fluid into an acutely inflamed quarter. However, two sub-acute cases of staphylococcic mastitis responded well to two treatments.

Mention must be made of the effect of the treatment on the milk supply. The milk remains yellow coloured for several days and production is lowered for a similar interval. In Herd B the dairyman concerned forwarded his cream from the treated cows separately. Little milk could be procured on the first day after treatment, and on the second and third days the cream was graded " second class," but thereafter was graded " choicest."

Acraflavine

Acriflavine and trypaflavine used in a manner similar to Entozon, although in a dilution of 1/10,000, have been found equally successful elsewhere. Accordingly it was intended to test the efficacy of acriflavine and a herd had been examined and treatments commenced for this purpose. Unfortunately, it was found that the dairyman was not obeying instructions, and the trial could not be considered to be a true test of the value of acriflavine and was abandoned. However, the bactericidal power of Entozon and acriflavine in the dilutions used for treatment have been compared employing strains representative of the serological types of *Str. agalactiae* known to exist in N.S.W. Under the conditions of the experiment, Entozon produced sterility after two minutes with all strains, whereas acriflavine was not effective until after five minutes, and in one instance the strain was still viable after 10 minutes had elapsed, but not after 15 minutes.

Summary

The efficiency of udder infusion with Entozon as a treatment for contagious bovine mastitis has been tested on 40 infected cows in two herds.

Str. agalactiae was eradicated from 70 per cent. of these after three treatments.

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Acknowledgements.—The writer is indebted to Messrs. Fassett and Johnson, Ltd., who generously donated the Entozon used in these experiments. The assistance given by Mr. Webster, District Veterinary Officer, Newcastle, and by officers of this station is gratefully acknowledged.

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For some time a good deal of what may be aptly described as " contraband " traffic has been going on in the surreptitious slaughter of cattle and sheep by some farmers in order to supply butchers with meat which had not been officially purchased from the Ministry of Food or its agent. With a view to putting an end to this abuse, all butchers throughout the country have been instructed that it will be a penal offence in future for them to sell or try to sell meat purchased in this irregular manner.—*Irish Independent.*

THE VETERINARY RECORD

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VETERINARY BIOLOGICAL PRODUCTS

THE use of biological products in the prevention and treatment of diseases of livestock is now a routine practice in veterinary medicine. Their value is well recognised provided they are of adequate potency and are used for specific purposes. The question of potency is all-important for, as is shown in an article published elsewhere in this issue, a series of products designated lamb dysentery serum varied considerably in antitoxin values; in fact, two samples would appear to have practically no value at all. This type of observation is neither new nor unique, for as long ago as 1937 the National Veterinary Medical Association accepted a resolution from its Annual Congress on the subject, the result of which was the setting up of the N.V.M.A. Advisory Committee on Biological Products. On April 4th, 1939, this Committee presented its report to Council. A perusal of the report shows clearly that the position concerning the potency of some biological products was highly unsatisfactory and, as far as we are aware, it has not changed materially since that time. It was pointed out that " some products were not submitted to extensive tests for potency or standardisation prior to issue, probably because, in some cases at least, no suitable tests have been devised " and, " when such tests are carried out, the same type of test and the same standards were not used in each laboratory with the result that biological products used for similar purposes were of different potencies " and again, " in some instances biological products were labelled for use in specific diseases but that laboratory and field tests had shown clearly that they had no apparent value in the control of the disease in question. An outstanding example is lamb dysentery serum." The Committee studied the problems of standardisation and potency testing at some length and prepared a list of biological products for animal use, obtainable in this country, which it divided into three sections—biological products for which an official standard is now available, biological products for which *standards* could be devised now; biological products for which *tests for potency* would be devised now. It is important to differentiate between " standardisation " and " tests for potency " for while in connection with the former a considerable amount of difficulty might be experienced in the devising and adoption of a suitable standard, potency testing is a simpler matter and could be agreed on by the various parties concerned.

Without some uniform testing for potency, veterinary surgeons cannot have the necessary information concerning the reliability of the different " brands " of biological products which they use. It is true, of course, that in continuing to use the same " brand "

in all probability the veterinary surgeon will continue to obtain the same results. He has no guarantee, however, that if for some reason he is persuaded to change the "brand" the results he has obtained in the past will continue to be satisfactory. For this and other reasons it is vitally important that some common method of testing these products should be adopted by all producers.

There is no doubt that the matter could be put on a sound footing by the introduction of legislation which would govern the standard and potency of any specified biological product as is the case concerning biological products for use in human beings. Short of this, the only other procedure we can suggest is that somebody—probably the National Veterinary Medical Association—should undertake the study of methods of potency testing and obtain an agreement between the producers and/or distributors of such products in this country that tests, agreed upon as satisfactory, are applied in every case before the products are issued.

At this time when the conservation of milk and meat are of vital importance to the nation, there can be no excuse for the use of biological products which, because they are lacking potency, fail to protect animals against disease or to cure specific ailments. Immediate action is necessary and it is the duty of this Association to exert all its energies to make sure that such a state of affairs is not allowed to continue.

IMPORTANCE OF BREEDING STOCK AS A FACTOR IN PLOUGHING-UP DECISIONS

The great importance to the farming industry, from the national point of view, of maintaining the valuable stock of breeding animals kept at Cantraydoune Farm, Nairnshire, by the Department of Agriculture, was the determining factor in the decision come to at Nairnshire Agricultural Executive Committee meeting at Nairn to relieve the Department of its obligation to plough additional land at that farm.

The Committee discussed the subject from all angles, and a Department official put forward a strong case for exempting the land from ploughing up. Several Committee members, while appreciating the high value of the breeding stock, found it difficult to reconcile the exemption appeal from the Department with the Government's expressed policy that stock should take secondary place to cereal and root crops.

The Department official explained that the stock carried at Cantraydoune was not a commercial one but purely for breeding purposes. The farm was being run on what might be termed a philanthropic basis and for the good of the industry. He went on to outline the vast number of animals held by the Department for breeding purposes in this area, largely rams required arising out of the policy of utilising deer-forests, and he spoke of the increasing difficulties meeting the Department in way of finding suitable grazing for these.

After hearing the explanation the Committee, while anxious to see that Nairn's quota of ploughing-up was carried through, finally agreed that, from the national viewpoint as against any local feeling in the matter, it was of extreme importance to the future of stock farming that facilities should be made available to preserve such breeding animals. The extra acreage scheduled to be ploughed up at Cantraydoune this year was accordingly written off.—*Farming News.*

CLINICAL COMMUNICATION

An Unusual Case of Heart Block in a Thoroughbred Gelding

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Our attention was drawn to a four-year-old thoroughbred gelding which showed cardiac arrhythmia and as some unusual features were noted it seemed of sufficient interest to publish the results of a systematic examination of this case.

The history was as follows: the animal was purchased as a yearling, presumably with a certificate of soundness and broken at three years of age. When broken he was given light work, nothing abnormal being noticed. He was then put into training and when given full work, went off his food, lost condition and became greatly distressed after each gallop. After galloping the animal would stagger about, sway from side to side and showed rapid and laboured respirations. He was then taken out of training and improved in condition after some months rest but on galloping 300 yards or so still became greatly distressed. He was then sent to the Veterinary College, Dublin, and kept under observation for a few weeks.

Cardiac arrhythmia suggestive of auricular fibrillation was pronounced but there was also a suggestion of heart block. Although the animal was kept at rest, the heart rate varied from day to day and surprisingly on some days the heart beat was perfectly normal and regular. On July 23rd the rate was 32 to 36 per minute with an intermittence at every third or fourth beat. The rhythm, however, was not definitely three to one or four to one but presented irregular groups and it seemed that some of the beats were premature. This could not be verified, as unfortunately no electrocardiogram was taken. An attempt was made to obtain a record of the venous pulse by inserting a cannula into the right jugular vein and connecting it to a water manometer and tambour recording on a smoked drum. The record, however, was unsatisfactory both from the upright and recumbent postures. A simple cardiogram was obtained but of course this revealed nothing as to the state of the auricles. In the afternoon, the heart beat was much improved, the rate being 46 to 50 per minute with an intermittence only at every 16 to 20 beats.

On the following day, July 24th, auscultation over long periods revealed no irregularity whatever and the arrhythmia had completely subsided, the heart beat being regular and the rate steady at 48 per minute with the exception of a short period when it fell to 44 per minute. Nothing had been done beyond ligaturing the jugular vein and inserting a cannula which was short and could not possibly have reached cardiac tissue. An electrocardiogram was taken which showed S.A. rhythm but a long P.R. interval which in some beats amounted to one-fourth or more of the cycle. This interval in a normal mare examined at the same time represented one-sixth of the cycle. Later in the afternoon of the 24th, auscultation revealed a recurrence of intermission and on the following morning, July 25th, arrhythmia but of a somewhat different type was re-established. Now the ventricles missed once in five or six beats and the rate varied between 36 and 40 beats per minute.

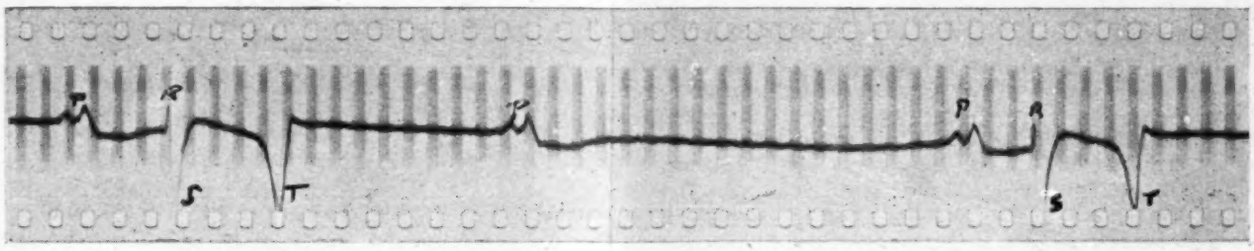

FIGURE I.

Polarity=Human Lead IV. Shows block in cycle succeeding one short P-R interval. Time=1/20th sec.

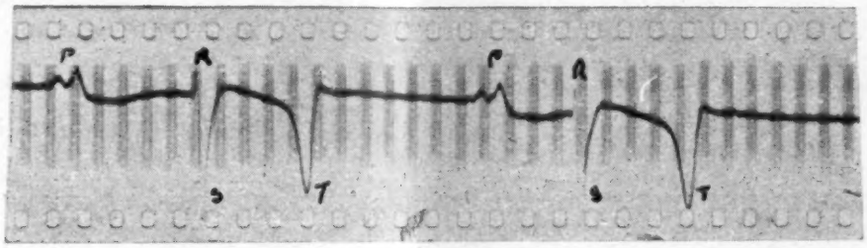

FIGURE II.

Polarity=Human Lead IV. Shows a long followed by a short P-R interval. Time=1/20th sec.

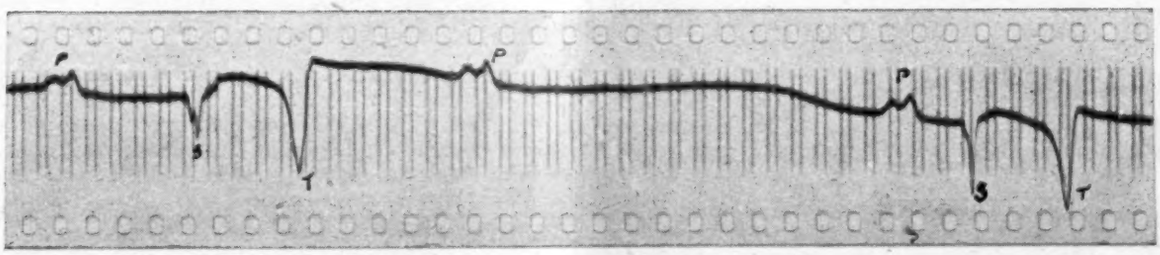

FIGURE III.

Polarity=Human Lead I. Shows block in cycle succeeding one with a long P-R interval. Time=1/20th sec.

An electrocardiogram was taken (Fig. 1) and the records left no doubt that this was a peculiar case of block. The P. wave was double but well formed, the R. wave was small in the lead from the right saddle area to apex and absent in that from right lower chest to apex, the S. wave was well marked and the T. wave inverted in both leads. The P.R. interval varied in different cycles from 0·35 to nearly 0·6 second, *i.e.*, from about one-fifth to one-third of the cycle. In Fig. 2 a cycle is shown in which the interval was nearly 0·6 second, the whole cycle taking 1·7 seconds, the interval thus being one-third of the cycle. In the re-entering cycle the interval was 0·4 second or about one-fourth of the cycle. In some beats just preceding block the interval was not more than 0·425 seconds so that block was not consistently preceded by the longest interval, Cf. Figs. 1 and 3.

On the following morning, July 26th, the condition of the heart was much the same as the preceding day and since the destruction of the animal had been decided upon, he was cast and $CHCl_3$ anaesthesia induced; also 1 gramme atropine sulphate was given intravenously. A record of the blood pressure in the right common carotid artery and the respiratory movements was taken on a smoked drum. The systolic pressure was 160 mm. Hg. and the diastolic pressure 110 mm. Hg. The rhythm was maintained fairly regularly for 20 to 30 minutes and evidence that atropinisation was complete was afforded by the fact that stimulation of the right vagus nerve in continuity caused no change in the heart but typical apnoea with a fall of blood pressure due to vasodilation. After this observation it was regretted that the animal had not been kept continuously under the influence of atropine for some time in order to see whether the heart would maintain S.A. rhythm.

On *post-mortem* examination, the heart weighed approximately 10 lb. and showed no macroscopic lesion nor abnormality with the exception that the wall of the right ventricle was flabby and did not maintain its shape after the pericardium had been removed. The a.-v. bundle was dissected out but the left bundle branch could not be demonstrated clearly. However, separation of a thin, frail band was effected which may have contained normal tissue. This suggested some congenital defect in conductivity. The persistent irregularity of the beat which was noted on occasion was indicative of organic trouble but it is probable that the disorder was functional and periodic, which would agree with the absence of macroscopic lesions and the observed changes. The term functional as usually applied to heart affections may be quite

fallacious; it suggests a condition that is amenable to drugs or other corrective measures and, therefore, curable. But the absence of gross lesions, or even microscopic lesions as these are at present appreciated, does not necessarily imply the absence of some inherent or congenital defect in the tissues, *e.g.*, myodromic failure in the bundle of His. Indeed, arrhythmia may be due to a variety of causes, *e.g.*, the improper development of the bundle, coronary dysfunction interfering with the blood supply to this vital connecting bridge or the chemical mechanism in the fixing of glycogen might be at fault. Whether we regard them as functional or not such affections are incurable by present-day methods and we agree with McCunn (1939) that an irregular and intermittent heart must be regarded as a serious complaint. We would add that diagnosis is uncertain without electrocardiographic records.

Summary

A case of heart block in a four-year-old thoroughbred gelding is described. The arrhythmia was not constant, prolonged periods of S.A. rhythm though with a fast rate being observed. The type of rhythm varied. E.C.G. records showed irregular variation of the P.R. interval, the length of which was not correlated with the occurrence of block.

Acknowledgment

We are very grateful to Professor O'Dea for bringing this case to our notice, to Professor O'Connor for carrying out the operations, to Professor Browne for making an extremely careful dissection of the bundle of His and particularly to Dr. J. A. Wallace of Sir Patrick Dunn's Hospital, Dublin, for taking the E.C.G. records.

Reference

McCunn, J. (1939.) *Vet. Rec.* **51**. 341.

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	Price net s. d.	*Post free* s. d.
Scientific and Industrial Research, Department of:		
Water Pollution Research Board, Summary of Current Literature. Vol. XIII, No. 8. August, 1940. Abstracts 895-998. (47-81-8-40.)	2 0	2 1
Agriculture and Fisheries, Ministry of:		
Bulletin 36. Manures and Manuring. 8th Edition, August, 1940. (24-201-36-40.)	2 0	2 3
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1988. *Feeding Stuffs* (Licensing and Control) Order, 1940, as amended. General Licence, November 16th, 1940	0 1	0 2
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ABSTRACTS

[RESULTS OF FEEDING ZINC TO PREGNANT MARES AND TO MARES NURSING FOALS. Graham, R., Sampson, J., and Henden, H. R. *J. Amer. vet. med. Ass.* **97**. 760. 41-47.]

In 1937 two unthrifty colt foals were destroyed after failure to respond to treatment. As the farm on which they were reared was close to a zinc smelter there was a possibility that the intake of toxic amounts of zinc from the pasture was the original cause of the disease.

Post-mortem examination of the foals showed parasitism (including ascarids, strongyles and bots) arthritis, and the possibility of border-line aphosphorosis. Abnormal amounts of zinc were found in the bowel, liver and urine, and also in the mares' milk.

Following this in 1938 the authors planned an experiment feeding zinc to pregnant and suckling mares to see if any ill effect resulted.

Eight mares were used in the experiment; two controls received the grain, hay and pasture as fed to the experimental group. Four mares received 54 grains of zinc sulphate once a day for periods of about one year; the other two received 540 grains of zinc sulphate once a day for about the same period.

In the farm mares receiving 54 grains per day the amount of zinc fed was estimated to resemble the intake of zinc from the pastures where the original diseased foals were kept, and in the two mares receiving 540 grains per day, it was thought that if zinc was to cause any slight ill effect in the first group, it would be accentuated in the latter.

In most cases the zinc feeding commenced about one week after the mares foaled and was continued throughout the nursing period of that foal and the subsequent gestation period.

No ill effects were noticed with the experimental or control animals and their foals, or with the foals born after the gestation period throughout which zinc had been fed.

The two mares which had the unthrifty foals in 1937 were included in the experiment, both in the 54 grains per day group, and subsequently produced normal healthy foals.

The authors point out the negative results of the experiment, and suggest that the diseased condition in the two foals, destroyed in 1937, was probably due to a combination of the effects of parasitism and bacterial infection, although at the time of *post-mortem* examination no bacterial organism could be isolated.

F. T. D.

* * * * *

[THE RELATIONSHIP OF PARTURIENT HAEMOGLOBINAEMIA OF DAIRY COWS TO APHOSPHOROSIS. Madsen, D. E., and Nielsen, H. M. (1940.) *N. Amer. vet.* **21**. 81-9. (3 figs., 4 tabs., 13 refs.).]

In a previous paper the authors described the nature of parturient haemoglobinaemia and the cellular and chemical changes which take place; the present report deals with data lending support to the theory that the disease is in some way associated with aphosphorosis.

An opportunity was provided to study the cellular and chemical constituents of the blood of five cows during the *post-partum* period at which haemoglobinaemia usually occurs. One of these animals receiving rations presumably low in phosphorus developed

haemoglobinaemia, and the erythrocyte counts and pulse rates suggested some disturbance in health in the other cows. The data collected from these cases suggest that cows may experience subclinical attacks of the disease which may not be recognised. The writers discuss the so-called phosphorus balance in relation to the phosphorus in feeds, and suggest that in animals where the phosphorus intake has for some time been low serious metabolic disturbances may result. This is aggravated when lactation causes a sudden call for a phosphorus reserve.

It is observed that parturient haemoglobinaemia is more prevalent in districts where sugar beet by-products are fed. This is attributed to the low phosphorus content of beet pulp and beet molasses. Thus, rations of alfalfa and wet beet pulp which are commonly fed in Utah and Idaho areas usually do not supply the minimum phosphorus requirement. Many workers also have shown that a close relationship exists between calcium and phosphorus metabolism, an excess of one being said to enhance further depletion of the other. In rations containing liberal quantities of alfalfa which is high in calcium, the tendency " to deplete further a cow already low in phosphorus, because of this ' dimineral relationship,' may contribute to ultra-low phosphorus levels in the blood plasma." Table III shows the inorganic phosphorus in the blood plasma of dairy cows from 14 herds where cases of parturient haemoglobinaemia occurred. In all but three the rations were alfalfa and beet pulp and in others alfalfa was fed. The conditions under which parturient haemoglobinaemia occurs and the chemical examination of the blood plasma and of the feeds consumed suggest that a deficiency of phosphorus in the rations may be a factor contributing to its cause.

The treatment of parturient haemoglobinaemia with dibasic sodium phosphate and its effect upon the erythrocyte destruction and blood plasma phosphorus is discussed. It is claimed that the use of this salt intravenously, combined with the administration of sodium phosphate or bone meal in drenches, quickly corrects the hypophosphataemia. L. E. W. B.

* * * * *

[IODINE IN ANIMAL NUTRITION. Fairbanks, B. W., and Curzon, Elizabeth. (1940.) *N. Amer. vet.* **21**. 25-28.]

The authors discuss the effects of iodine deficiency on farm animals and poultry and quote the conclusions of many workers in this field. They point out that this condition manifests itself in adult cattle and horses and in poultry by enlargement of the thyroid glands. In iodine-deficient areas, the young of all species tend to be born dead or weakly with thin coats or entirely hairless, and with enlarged thyroid glands. Such young animals usually die a few hours after birth but recovery from the condition is more common in the case of calves.

The feeding of iodine supplements during the last three-fourths of pregnancy was effective in preventing these conditions (0·35 to 1 gr. of KI per week for breeding ewes, 15 grs. per week for mares).

The value of iodine supplements in apparently healthy animals is discussed; it is concluded that " except specifically to prevent goitre it seems uneconomical to supplement rations with iodine in the hope of obtaining some slight benefit, when experimental evidence is so conflicting."

D. W. B. T.

[DEVELOPMENT OF CARDIO-PERICARDIAL ADHESIONS FOLLOWING THE USE OF TALC. Thompson, S. A. (1939.) *Proc. Soc. Exp. Med. Biol.* **40**. 260-261.]

Experimental production of a bread-and-butter pericarditis in dogs by the introduction of talc (hydrous magnesium silicate) into the pericardial sac is described. The operation was performed 46 times on 40 dogs. Under intraperitoneal nembutal anaesthesia and intratracheal oxygen insufflation the chest was opened at the fifth interspace. The pericardium was incised and about 1 dram of talc sprinkled lightly on to the epicardium. The pericardium was then sutured, the lung re-expanded, and the chest wall closed. Adhesions between the two surfaces occurred as early as 18 hours, and fusion was complete after four weeks. The talc remained *in situ* for an indefinite period. The presence of new blood-vessels in the adhesion area was demonstrated.

D. D. O.

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[HISTOLOGY OF THE CUTANEOUS REACTION IN GUINEA-PIGS TO PURIFIED BRUCELLA PROTEIN. Morales-Otero, P., Koppisch, E., and Gonzalez, L. M. (1939.) *Proc. Soc. Exp. Med. Biol.* **42**. 503-505. (2 refs.).]

The histopathology of the reaction which follows intradermal injection of purified Brucella protein and dead Brucella organisms into the skin of normal and sensitised guinea-pigs is described. In normal guinea-pigs both protein and dead organisms provoke an immediate mild inflammatory reaction without oedema and characterised by a moderate neutrophilia and eosinophilia. In animals sensitised previously by injections of live Brucella organisms the reaction is more violent with marked oedema, and accompanied by intense neutrophilia. The reaction rises gradually to a climax on the third day, and then rapidly regresses. Quantitatively, the reactions to Brucella protein are similar to those induced by dead bacilli.

D. D. O.

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[BEE STINGS IN THE HORSE. (Trans. title.) Daake, Dr. (1940.) *Deuts. tierärtzl. Wschr.* **48**. 21-23. (num. refs.).]

The normal odour, and particularly the sweat, of a horse appears to be obnoxious to bees, as, at times when horses are brought near to bee hives, attack is relatively common.

According to the literature reviewed and the author's personal observations, the majority of such cases are fatal. Medicinal treatment is of no avail, although the speedy generation of smoke serves to drive off the swarm.

The chief symptoms observed were skin lesions all over the body as a result of the actual sting, oedema of dependent parts, legs straddled out from the body, marked congestion of visible mucous membranes, laboured breathing, greatly increased heart rate and blood-stained urine.

Post-mortem findings were haemorrhages in the subcutaneous tissues, hyperaemia of the lungs, parenchymatous myocarditis with dilatation of the heart, haemolysis, enlarged spleen and oedema of the glottis.

C. W. O.

[**INTRATRACHEAL ANAESTHESIA.** Gadd, J. D. (1939). *N. Amer. Vet.* **20.** 65-66.]

This method of anaesthesia is advocated in small-animal surgery as being particularly useful in operations of the chest and throat and in heavy-jowled dogs. In the vapour method used air is blown over ether by an electrically operated centrifugal pump. The animal is first anaesthetised with a mask to obtain relaxation before introducing the tracheal tube. The tube is held in position by strings, previously attached the desired length from the end, around the base of the head. Pre-anaesthesic preparation is the same as that in orthodox anaesthesia. The tracheal tubes are of rubber and made in different sizes—the tube selected should not fit the trachea too closely.

W. M. H.

REPORT

[**NATIONAL INSTITUTE FOR RESEARCH IN DAIRYING:** Annual Report. (1939.)]

The annual report of this Institute for 1939 is presented in a manner identical to that of the previous few years, there being a general, introductory section followed by sections dealing with the work of individual departments. A remarkable feature once again is the great variety of the problems, both large and small, the investigation of which those at the Institute undertake. There is as usual, however, a strong bias towards questions of practical importance.

The shortage of home-grown feeding stuffs encouraged a search for substitutes, all of which need to be subjected to trial before being handed on to the farmer. R.G. silage, vitamin A supplements in the diet of pigs and the value of dried skimmed milk for suckling and weaner pigs were all under enquiry.

Various aspects of mastitis were attacked. The survival period of tubercle bacilli in butter kept at ordinary room temperature in summer was shown to be not more than 21 days.

In the department of Physiology and Biochemistry the growth-promoting properties of summer and winter milk were tested out on rats. In the experiments recorded no difference was observed. The colostrum of four Shorthorn cows was shown to contain 35 times as much vitamin A and 65 times as much carotene as in later milk, estimated per gramme of colostrum or milk. The physiology of lactation, the growth of the mammary gland and the influence of hormones on certain types of sterility have all been approached.

It is probable that specialists in any particular line will have read the particular works which interest them but for the general reader this annual report provides much of passing interest and may encourage him to enquire more deeply into certain questions.

N. S. B.

Stanley Nicholas, of Hope's Place Farm, Cheshire, successfully contested a summons issued against him at Chester Castle Sessions for selling milk containing 13·3 per cent. of extraneous water on the plea that his cattle's supply of milk was affected by low-flying aircraft.

IN PARLIAMENT

Government Proposals for Agriculture

Immediate Production Plans and a Long-term Policy

In our last issue we made such brief preliminary reference as space allowed to the important proposals for ensuring an immediate increase in home production, coupled with a long-term policy for British agriculture, reported to the House by the Minister on November 26th, in reply to a question by Earl Winterton. Following is the text of the Hansard report of the proceedings:—

Earl Winterton (*by Private Notice*) asked the Minister of Agriculture whether, in view of the Prime Minister's recent reference to the urgent necessity of producing the greatest possible volume of food in this country, he can make any statement of the Government's intentions in regard to increased home food production and the formulation of a long-term policy for British agriculture.

The Minister of Agriculture (Mr. R. S. Hudson): The Government has decided that a further increase in home food production is vital. The nation requires increased home production of certain agricultural products. Of these, crops suitable, if necessary, for human consumption are the most important among the arable products, and milk among the livestock products. The Ministers responsible for agriculture in England and Wales, Scotland and Northern Ireland, have considered with the Minister of Food whether such a further increase could be promoted by extending the guarantee given to the agricultural community as to the future stability of their industry. The Government has, by ensuring a guaranteed market at guaranteed prices for the principal agricultural products for a year ahead, helped to create more stable conditions up to the 1941 harvest. The Government has now decided to go further and to guarantee that the present system of fixed prices and an assured market will be maintained for the duration of hostilities and for at least one year thereafter. Prices will be subject to adjustment to the extent of any substantial changes in cost of production. Agricultural wages will continue to receive the protection afforded by the minima prescribed under the Agricultural Wages Acts. The Government recognises that Scottish agriculture presents problems which call for special action. The Government, representative as it is of all major political parties, recognises the importance of maintaining after the war a healthy and well-balanced agriculture as an essential and permanent feature of national policy. The guarantee now given is meant to secure that stability shall be maintained not only during hostilities but during a length of time thereafter sufficient to put into action a permanent post-war policy for home agriculture. The Government for its part will do its utmost to see that all possible supplies of such requisites as fertilisers and machinery are made available. Ministers believe that the safeguards afforded by this guarantee will enable farmers to undertake, at once, the further considerable expansion of production now required, and to respond to the Prime Minister's call to all concerned to produce the greatest volume of food of which our fertile land is capable.

Earl Winterton: May I ask my right hon. Friend whether this expansion of production to which he has referred will include cultivable land which is now derelict either as individual fields or as farms, or whether it refers only to increased production from land already farmed; and in that connection will he give consideration to the plan which I have adumbrated in a question and which involves the formation of a special *ad hoc* body to deal with this question of cultivable land now derelict—land which runs into many hundreds of thousands of acres?

Mr. Hudson: The problem falls into two parts. There is no doubt at all that the immediate need is for increased production at once—this year—and we shall get it best by increasing the yield, as far as possible, of the existing arable acreage. But it is equally true that next

year we shall require much further arable acreage and it is absolutely necessary that we should take steps to make that land suitable for cultivation next year. I do not think that a special body is necessary. I think the existing committees either have or are being given adequate powers to deal with the matter.

Mr. Barnes: In view of the Minister's statement that the Government intend now to tie their policy to fixed prices for the duration of the war and for a year after, can he state whether they intend to apply an efficiency test in fixing prices and whether an examination of production costs will also have a place in any such fixation of prices?

Mr. Hudson: The county committees are busily engaged at present in doing that, as a result of the farm survey, and they are being asked to get on with the job and apply their powers both firmly and with understanding.

. . . . .

Agriculture, Scotland (Government Proposals)

On November 28th, The Secretary of State for Scotland (Mr. Ernest Brown): In the first place, I must make it clear that the general announcement of Government agricultural policy made on Tuesday applies to Scotland and Northern Ireland, as well as to England and Wales. Scotland, through its Members in this House, naturally wishes to know what the sentence in that announcement

"The Government recognises that Scottish agriculture presents problems which call for special action"

means. On a review of Scottish agricultural needs, two problems stand out—the situation of the hill sheep farmer, and the destructive effect in many parts of Scotland of pests such as bracken and rabbits. The Government have, I am glad to say, recognised the need of the hill sheep farmers and agreed that means of assisting this important industry must be devised at once. We are urgently working at the necessary plans. Our aim is to ensure that the hill and heath lands which make up a large proportion of Scotland should be used to the greatest possible extent for the breeding and grazing of stock, since the ploughing up of lower land must tend to a reduction of grazing facilities there. Our objectives are the maximum use of deer forest and other sporting land for summer grazings, improvements in the economy of hill sheep farming and the encouragement of cattle breeding and maintenance on the hills. With regard to the problem of pests, it is clear to all who know Scotland that food production is being hindered and greater efforts prevented by the ravages of bracken, rabbits and other pests. Scottish Members will be glad to know that the Government have decided that a sustained campaign against these pests shall now be undertaken. I am sure that Scottish agriculturists will welcome these decisions and that when they are put into effect we, in Scotland, shall be able to make a fuller contribution to the nation's food supply. When the details of the necessary plans have been worked out, I shall hope to make a further statement.

. . . . .

Among other questions and answers recently recorded in the House are the following:—

Pigs (Tuberculosis)

Mr. Hannah asked the Minister of Agriculture whether his attention has been called to the amount of tuberculosis found in pigs sent to bacon factories for slaughter, and whether he will make an order that as a precaution, all skimmed milk and whey, before being fed to hogs, shall be boiled?

The Minister of Agriculture (Mr. R. S. Hudson): I am aware that from time to time parts, and, less frequently whole, carcases of pigs consigned to bacon factories are condemned on account of tuberculosis, but I have no reason to think that the general incidence of the disease is on the increase. With regard to the latter part of the Question, the adoption of my hon. Friend's suggestion would not be practicable in present circumstances, nor would it, in any event, affect the spread of infection by strains of tubercle bacillus other than the bovine, which account for about 50 per cent. of tuberculous infection in pigs.

. . . . .

Military Service (Scientific Research Workers)

Sir R. Gower asked the Minister of Labour why the age of reservation for scientific research workers other than those mentioned in certain special categories, has been raised to 30 years, having regard to the fact that the present experience of the Central Register is that the demand for scientific research workers is greater than the available supply; and whether he will look into this matter with a view to remedial action?

Mr. Assheton: The scientific research workers in question are mainly workers in botany and zoology. The decision to raise the age of reservation from 25 to 30 was taken in consultation with the Botany and Zoology Sub-Committees of the Central Register, the Agricultural Research Council and the University Vice-Chancellors' Committee. I may mention that the age of reservation of university professors and lecturers in general has been raised to 30. I should add that arrangements exist under which any individual scientific research worker below the age of reservation, whom it is necessary to retain in his ocupation, may have his calling up deferred.

. . . . .

Purchase Tax

Sir R. Gower asked the Financial Secretary to the Treasury whether he is aware that the Purchase Tax, though not applied to saddlery and harness, is applied to the relining of horse collars, with the result that owners of horses may be unable, on grounds of expense, to have their horses' collars relined as often as necessary, and whether, seeing that 95 per cent. of the cases of horse suffering arise from faulty collars, he will extend the exemption to collar checks, cloths and wool and flock used for the relining of horses' collars?

Captain Crookshank: I understand that the use of these materials is not confined to the relining of horse collars and I am afraid it would not be practicable to exempt such goods from the tax by reference to their intended use.

Mr. Naylor asked the Chancellor of the Exchequer whether, in view of the exemption of cod-liver oil products from the operation of the Purchase Tax, he will extend the exemption to halibut-liver oil, olive oil, and liquid paraffin, which are similar remedial food preparations in frequent use by public institutions?

Sir K. Wood: As I informed the hon. Member for Heywood and Radcliffe (Mr. Wootton-Davies), halibut-liver oil is not chargeable with Purchase Tax. Olive oil is liable to tax if put up for medicinal, veterinary or toilet use and liquid paraffin is also liable to tax. The only exception from the statutory heading is in respect of "Essential drugs of an exceptionally costly character" and it is not considered that either of the substances mentioned comes within this category.

. . . . .

Foreign Doctors

Sir T. Moore asked the Secretary of State for the Home Department why American doctors, graduating in Scotland, are not allowed to work in this country instead of priority arrangements being made for them to return to the United States of America?

The Under-Secretary of State for the Home Department (Mr. Peake): It would not be in the interests of the British medical profession that all persons

of foreign nationality who come to the United Kingdom for a course of study or for the purpose of obtaining a British medical qualification should be free to establish themselves as medical practitioners in this country, and the practice has been to admit such foreign visitors on the understanding that they will leave when they have completed their course of study. It has, however, recently been decided that, in existing circumstances, American and nationals of other friendly countries who have obtained a British degree may remain here temporarily and be allowed to take certain appointments such as that of house surgeon or physician in a hospital or the position of assistant or *locum tenens* to a British medical practitioner.

Sir T. Moore: Why should there be any restriction on the services of these qualified, trained, professional people who are willing to come to our assistance in these times of shortage of medical staff thoughout the country?

Mr. Peake: There is an embargo on their services in view of a recent change in policy, and I trust that no American doctor has been subjected to any disadvantage in England on account of the fact that he has graduated in Scotland.

Mr. Davidson: In order to utilise fully the services of those doctors, would the Minister consider setting up a separate war-time register?

Mr. Peake: That proposal would have to be very carefully considered.

Sir Francis Fremantle: Is it not true that American doctors have very varied qualifications, many of which are quite inappropriate and unsuitable? Others are very good, and they ought to be used. Therefore, there should be some distinction.

NOTES AND NEWS

The Editor will be glad to receive items of professional interest for inclusion in these columns.

Diseases of Farm Stock

National Veterinary Medica' Association Sch me of Prevention and Control

President's Announcement at Shrewsbury

It will be remembered that, in his recent presidential address to the annual meeting of the National Veterinary Medical Association, Mr. H. W. Steele-Bodger, M.R.C.V.S., voiced the Association's conviction that this is pre-eminently the time to make a determined onslaught against those preventable diseases which are responsible for so much loss to the farming community and to the country as a whole, and intimated that the work of the Survey Committee would shortly enable the Association to lay proposals to this end before the responsible authorities.

The President carried his references to this vitally important matter a stage further when, at a meeting called (in Shrewsbury on Saturday, November 23rd) by the Shropshire Chamber of Agriculture to discuss the prevention of the diseases of farm stock, he publicly announced that a national scheme to prevent and control these disorders, drawn up by the National Veterinary Medical Association, was to be submitted to the Animal Health Division of the Ministry of Agriculture and to the Agricultural Research Council within the next fortnight.

Col. G. P. Pollitt, the President of the Chamber, was in the Chair, and the scheme was explained by Mr. Steele-Bodger. After the meeting had heard an address on the prevention of cattle diseases by Prof. T. Dalling, Professor of Animal Pathology, Cambridge University, a sound film illustrating the modern methods of preventive control of animal disease was shown by Mr. D. W. P. Bythell, of the Harper Adams College.

The Scheme Explained

Mr. Steele-Bodger said he proposed to outline a scheme which they were evolving for the control of many of those diseases. It was not yet complete in any respect. The National Veterinary Medical Association had considered the matter in all its aspects for some time and had come to certain conclusions. Those conclusions were being submitted in the very near future to the Animal Health Division of the Ministry of Agriculture and the Agricultural Research Council. What he was going to tell them was only what they of the Veterinary Association thought were the lines along which disease control should proceed. They were stimulated into considering that scheme really by the obvious degree of disease which existed in the country to-day. They had felt for some time that something had got to be done about it. Now the war had come upon us it was more than ever essential that every gallon of milk which could be produced should be produced, and every calf which could be reared should be reared.

Briefly what they had decided was that in regard to such scourges as mastitis, contagious abortion and sterility, the individual efforts of the veterinary surgeon and a few of his clients were not going to cut any ice in the national control of those diseases. Those diseases must be tackled on a much wider and much more solid basis. They therefore came to the conclusion that provision must be made for regular routine visits to the farms by veterinary practitioners. At the time of those visits the practitioner would carry out examination of the udder of every milking cow and heifer in the herd. He would advise on the condition he found and would treat those cases which were affected.

As regarded contagious abortion, eradication by blood testing and segregation and elimination of infected animals was only feasible on a small scale. In practice in a country such as this such a scheme was almost doomed to fail. Therefore, some type of vaccination would have to be instituted. The type of control to be adopted would be decided after due consideration by the practitioner in consultation with the farmer, having regard to the conditions which existed on the farm and the history of the herd and the type of herd it was.

As to control of sterility, the practitioner would examine every cow and heifer in the herd for pregnancy. Those which were barren after being served two or more times by the bull would be treated.

They were satisfied that if the practitioner had early and ready access to the farm and the active co-operation of the farmer, up to 80 per cent. of sterility could be definitely either prevented or cured. But the farmer would have to do his part. He must keep accurate records. In the control of such a disease as sterility, it was absolutely essential that they should keep accurate records of service, calving, abortion, etc.

Finance

As to the method of financing the scheme, that had yet to be decided. They were convinced that free laboratory facilities must be available to the farmer through the veterinary practitioner and to the veterinary practitioners by existing laboratories or the extension of them.

They had considered types of control and whether the scheme should be voluntary or compulsory; whether it

should be by a fee basis as between the veterinary surgeon and the farmer, or by means of a levy. They were satisfied that in the long run this had got to be a compulsory scheme. It was no good an individual farmer or small group of farmers eliminating this or that disease if their neighbours were not going to do the same and play fair. In the long run this would have to be a scheme with probably a compulsory levy. They would realise that the institution of such a scheme would take time, and they could not wait for it. Therefore, they were going to press that for the next few months that scheme should be set up on a voluntary basis, an arrangement between the practitioner and his client, and that it should be a *per capita* levy, and they hoped—he would not say more than that—that financial assistance towards it might be forthcoming from the Animal Health Division of the Ministry of Agriculture.

The ideal way for such a scheme, said Mr. Steele-Bodger, would be by means of a *per capita* levy on dairy stock, administered by the Milk Marketing Board deducting monthly levy from the farmer's cheque. They had considered a suggestion of a bonus for farmers co-operating in the scheme, but that was in the air at the moment. Disease cost this country £19,000,000 per year. Reports showed that 58 per cent. of the animals which left the herds of this country did so on account of disease. That, to-day, with the present amount of knowledge available, was inexcusable. It was an indictment not only of the farming community but also of the veterinary profession. But he thought it was fair to say also that that state obtained because satisfactory facilities did not exist for that intimate collaboration between the practitioner and the stockowner which was absolutely fundamental to the success of any scheme of disease control or eradication. He was confident that with goodwill on both sides, they could evolve a workable scheme which would very materially reduce those diseases—up to 80 per cent. in sterility cases, up to 45 per cent. in mastitis cases and very appreciably in contagious abortion cases. Within 14 days they were meeting the Ministry of Agriculture and the Agricultural Research Council. As soon as the plans were matured they would go to the farming community and ask them to assist them so that they could benefit, collectively, agriculture to-day.

Mr. K. D. Downham, of the Veterinary Staff of the Harper Adams Agricultural College, Shropshire, said the veterinary profession and the farmers had not got together enough to study the problems from a united platform. He thought that was a good starting point for a very big scheme which would be of great importance at the moment to the whole nation.

He had formed the opinion that agriculturists and the veterinary profession had nothing to be proud of in regard to the state of health of the majority of the dairy herds in the country to-day. In fact, he thought most of them were an absolute disgrace from the health point of view. He had personal knowledge of farms where the entire herd had been replaced every two years on account of disease, and where depreciation had represented over 4d. per gallon of milk produced. He had knowledge of a farm where a single disease had cost £600 in a year. His experience had shown that the control of disease in such herds was not hopeless, as it might appear. He had known 60 per cent. of tuberculosis cured and over 80 per cent. of contagious abortion. He quoted a case in which 20 heifers which had been vaccinated had all carried their calves and passed the agglutination test, while out of 10 or 12 others not vaccinated four had aborted and all had reacted to the agglutination test. Abortion was a thing for which every few years someone produced something which they said was good, and farmers spent far more money on quack remedies for that disease than they did in veterinary fees. He knew a farmer who had had two bottles of stuff costing £7 10s. 0d. each for treating contagious abortion. He might just as well throw the money down a grid, because there was no known remedy which they could give by mouth which would cure contagious abortion. The results achieved by the use of vaccines held out a good deal of hope for controlling the disease. As to mastitis, he thought it should be more widely known that they could do far more for the common type of mastitis than they could a few years ago. Some years ago he had worked intensively on Johne's disease and he agreed with what had been said of the importance of dealing with the young stock.

Col. G. P. Pollitt said that Mr. Steele-Bodger had outlined a scheme which they all hoped would become a national scheme. There was no reason why there should be a single tuberculous animal in the country. He was emboldened to say that because he was recently in America and some years ago they had it as we had it in this country. To-day they had not a single case in the United States. What they could do we could do. But we did not make any effort, and until we did we should get nowhere. Under the New Deal America had decided to reduce the total head of cattle in the country, but they only slaughtered the diseased animals and they practically got rid of the lot. We should have great difficulty in taking a step of that sort in this country, but the disease could be eliminated by slaughter of the infected animals.

As to the financing of such a scheme as Mr. Steele-Bodger had outlined, suppose, said Col. Pollitt, there was a levy on stockowners, would they not be wise to pay it willingly, and would they not say that they were prepared to help by subscribing towards laboratory facilities? When Col. Pollitt asked whether it was the opinion of the meeting that the farmer should be asked to subscribe, a large proportion of the farmers present signified their willingness.

* * * * *

R.C.V.S. OBITUARY

Lake, Richard George James, M.R.C.V.S., Ivy House, Ashby-de-la-Zouch, Leicestershire. Graduated London, July 19th, 1914; died December 3rd, 1940, aged 58 years, after an illness of 10 weeks.

* * * * *

ROYAL COLLEGE OF VETERINARY SURGEONS

Animal Management Examination, November, 1940

List of Successful Candidates

(*Continued from page* 810.)

Dublin

Aitken, J. (credit).
Beirne, J. P.
Black, R. A.
Boyd, N. C.
Burgess, S. R.
Burke, E. S.
Connolly, G. F.
Dawson, R. M.
Corridon, M.
Curtis, R. G.
Dalzell, K.
Dancey, G. F.
Dwyer, A. J.
Eivers, B. W.
Finlay, J. T. T.
Fitzgerald, Miss P. P.
Fitzpatrick, D.
Gilmore, R. A.
Harris, K. A.
Hunt, T. G.
Kay, E. D.
Kavanagh, James.
Kelly, Roderick.
King-Hall, R. C.
Lee, R. P.
Leonard, T. B. (credit).
McAtee, P. J.
McCarroll, P. J. (credit).
McGettigan, C. J.
O'Regan, R. J.
Mone, P. B.
Mullin, W. J.
O'Connor, J. G.
O'Farrell, J. D.
Quealy, Andrew.
Rice, D. P.
Roe, M. C.
Sweeney, P. A.
Thornberry, H.
Wall, Brian.
Wildman, W. D.
Wolfe, F. E. (credit).
Yourell, Miss J. (credit).

ETHICAL PHARMACEUTICALS ASSOCIATION

Mr. W. A. Edwards, presiding at the fifth Annual General Meeting of the members of the above Association, in the course of his report on the work of the Association in the past year referred to the Compulsory War Risk Insurance Scheme, the Import and Export Licensing regulations and to foreign patents and trade marks, subjects which the Association had dealt with during the year.

In commenting upon the Purchase Tax, Mr. Edwards stated that he did not think it superfluous to deprecate the narrow list of essential drugs of exceptionally costly nature and expressed surprise that sales to hospitals were not exempted from the tax.

The report concluded with a tribute to the Secretary and staff who had had to solve many problems associated with emergency legislation and Government regulations.

* * * * *

A CLYDESDALE CENTENARY

The first Clydesdales were imported into Canada in 1840, and to commemorate that important event the Clydesdale Horse Association of Canada has this autumn published a Centennial Booklet, embodying one hundred years of Clydesdale history in the Dominion.

Summing up the position at the date of publication of Vol. 1 of the Canadian Stud Book, the centennial booklet states: "When the first Clydesdale was imported 100 years ago, the horse stock of the country was of a generally nondescript character. The draught horse as we know it to-day was not in existence in Canada. It was a question of building up right from the start upon an inferior foundation, so far as the general horse stock in the country was concerned. The Clydesdale came, the Clydesdale conquered. The Clydesdale made Canada draught horse conscious. It set the pace (is still doing so) in the production of high-class draught horses, an achievement the people of the Dominion should be proud of. Canada owes a lasting debt to the Clydesdale for piloting the way in building up and developing the draught horse industry of the country."—*Scottish Farmer.*

* * * * *

The existence of foot-and-mouth disease was confirmed on Monday last among cattle at Heningborough, Yorks (East Riding).

* * * * *

INSPECTION OF CASUALTY STOCK

It will be recalled that a short time ago arrangements were made whereby the owner of a casualty animal was entitled, if he so desired, to see the carcase of his animal graded and weighed. It has now ben specified in an instruction to Ministry of Food officials that where this privileged is not exercised, and the carcase of the casualty animal or a part thereof is condemned, the producer must be notified by the Slaughterhouse manager and informed that the carcase will be available at the slaughterhouse for inspection for a period of 24 hours after condemnation.

* * * * *

MINISTRY OF AGRICULTURE NEWS SERVICE

Outwintering Cattle: Making the Most of Available Grass.—Outwintering cattle, common in many districts, even in the North of England, might be extended in wartime to save labour and to make the most of all the available grass. Cattle under 12-18 months old are generally best yarded during winter, except possibly in sheltered districts in the South-west. Older stock, such as heifers for the dairy or stores for fattening on grass next summer, can be wintered outdoors except where soil and climatic conditions are unfavourable.

Heavy land farms, liable to poach where rainfall is high, are not suitable. Any saving of food that might result would be more than offset by damage to the grassland and the consequent reduction of spring growth. There is less risk of excessive poaching where a fair amount of rough grass is left. With supplementary feeding, the object should be just to keep the animals in fair growing condition, ready to go ahead when the spring grass comes. Shelter is a great advantage and it is equally important that the animals should be able to lie reasonably dry.

Cattle wintered outdoors often look somewhat poorer than yard cattle at the end of the winter, but they go ahead more rapidly in spring and generally soon catch up. For cattle over 18 months, concentrates can generally be dispensed with. They can usually be kept in fair condition by moderate quality hay or even oat straw, together with a few roots, sugar beet tops or kale. If roots are fed, the quantity should be restricted to prevent any undue laxative effect.

Silage is also excellent for outwintering stock; and in circumstances where the use of a little concentrated food might be considered desirable, namely, for the younger stock, high quality silage would be a useful substitute.

Cattle to be outwintered should be in good condition at the start and should not be allowed to get into poor condition before bad weather sets in. It is better to prepare them to withstand bad weather by keeping them in reasonably good condition than to give them an extra allowance of food when severe weather comes. They should not be allowed the free use of all the grassland on the farm during winter. Some of the grass should be shut up to give an early bite in spring, possibly with the help of a little nitrogenous fertiliser applied in February or March.

. . . . . .

Farmers using cod-liver oil in their livestock rations have been concerned lest this be liable to the Purchase Tax. It has now been removed from the schedule, together with cod-liver oil and malt and simple emulsions and will not be subject to the tax.

. . . . . .

Local Food Offices have been authorised to issue permits at the rate of 10 lb. of sugar per colony of bees for winter and spring feeding. Applicants will be asked to produce satisfactory evidence of the number of colonies in their possession.

CORRESPONDENCE

Letters to the Editor should reach the Office not later than by the first post on Tuesday morning for insertion in following Saturday's issue.

The views expressed in letters addressed to the Editor represent the personal view of the writer only and must not be taken as expressing the opinion or having received the approval of the N.V.M.A.

* * * * *

DISEASES OF CATTLE

To the Editor of the Veterinary Record

Sir,—In the *Farmers' Weekly* for November 29th, Mr. K. D. Downham, in a speech at Shrewsbury, is reported to have said that he had known 60 per cent. of tuberculosis cases in cattle and over 80 per cent. of cases of contagious abortion cured. This is indeed good news for all farmers, and especially for those who keep a herd of pedigree dairy cows. It would be interesting and instructive if Mr. Downham would report the cases in question for the benefit of his veterinary colleagues.

Yours faithfully,

Graham Rees-Mogg.

Clifford Manor,
Stratford-on-Avon.
December 2nd, 1940.

Contents

	PAGE
GENERAL ARTICLES:	
The Toxicity of Laevulose Cyanhydrin, together with General Observations on Cyanide Poisoning ... ... ALASTAIR N. WORDEN	857
Development of Certain British Veterinary Services Overseas (Cont.): Veterinary Department—Nigeria ... ... W. W. HENDERSON	866
EDITORIAL:	
The Evolution of the Colonial Veterinary Service	867
CLINICAL COMMUNICATION:	
Castration of the Racing Greyhound J. P. ALLEN POTTS	868
ABSTRACTS:	
Glanders in Army Horses (Dildine, S. C.) R. L.	869
I.—The Relationship between the Mallein Reaction and Changes in the Spleen in 300 Mongolian Glandered Horses; II.—The Relationship between the Mallein Reaction and the Changes in the Nose in 300 Mongolian Horses (Itikawa, O.) ... ... R. L.	869
REPORT:	
Kenya Colony and Protectorate: Report of the Veterinary Department, 1938 ... ... W. K.	869
IN PARLIAMENT	870
NOTES AND NEWS:	
Foot-and-Mouth Disease	865
Swine Fever Position in Suffolk	867
Zoo Animals and Air Raids	868
Diary of Events	870
Evacuation of Children to Canada: Arrangements in Progress by the Ontario Veterinary Association	870
A Christmas Gift Appeal	871
Legal Notes: Bull Licensing Act Offences ...	871
General Obituary: Sir Henry Head; Prof. R. T. Hewlett; Prof. Hans Zinsser	872
CORRESPONDENCE:	
V.V.B.F. Appeal for Christmas Gifts J. W. BRITTLEBANK	872
Diseases of Cattle ... ... K. D. DOWNHAM	872
Strained Tendons and their Treatment R. C. IRVING	873
G. P. MALE	873
R. F. WALL	874
A. C. FRASER	874
Veterinary Biological Products J. W. HALL MASHETER	874

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